request reconsideration of the instant application in view of the following amendments and remarks.

IN THE SPECIFICATION

Please **amend** the paragraphs beginning at page 6, line 20 and ending at page 6, line 32 with the following rewritten paragraphs:

The instant invention provides immunogenic peptides capable of eliciting protective immunity against botulinum neurotoxin of serotypes A-G.

The instant invention also provides vaccines capable of eliciting protective immunity against botulinum neurotoxin, where the vaccines do not act as neurotoxins themselves.

The instant invention further provides methods for preparing non-toxic peptides for use in vaccines against botulinum neurotoxin by growing recombinant organisms which express the peptides.

The instant invention also provides methods for fast and efficient purification of the non-toxic peptides from cultures of recombinant organisms.

These and other aspects are illustrated by one or more of the following embodiments of the present invention.

Please **amend** the paragraphs beginning at page 9, line 20 and ending at page 11, line 12 with the following rewritten paragraphs:

Figures 1A and 1B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_C fragment of BoNT serotype A (SEQ ID NOS:1 and 2).

Figures 2A and 2B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_C fragment of BoNT serotype A (SEQ ID NOS:3 and 4).

Figures 3A and 3B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_C fragment of BoNT serotype A (SEQ ID NOS:5 and 6).

Figures 4A and 4B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_C fragment of BoNT serotype B (SEQ ID NOS:7 and 8).

Figures 5A and 5B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_C fragment of BoNT serotype C (SEQ ID NOS:9 and 10).

Figures 6A and 6B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_C fragment of BoNT serotype D (SEQ ID NOS:11 and 12).

Figures 7A and 7B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_C fragment of BoNT serotype E (SEQ ID NOS:13 and 14).

Figure 8 shows the nucleotide sequence for a synthetic gene encoding the H_C fragment of BoNT serotype E and the encoded amino acid sequence (SEQ ID NOS:35 and 36).

Figures 9A and 9B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_C fragment of BoNT serotype F (SEQ ID NOS:15 and 16).

Figures 10A and 10B respectively show the nucleotide sequence and the encoded amino acid sequence for

a synthetic gene encoding the H_C fragment of BoNT serotype G (SEQ ID NOS:17 and 18).

Figures 11A and 11B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_N fragment of BoNT serotype A (SEQ ID NOS:19 and 20).

Figures 12A and 12B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_N fragment of BoNT serotype B (SEQ ID NOS:21 and 22).

Figures 13A and 13B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_N fragment of BoNT serotype C (SEQ ID NOS:23 and 24).

Figures 14A and 14B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_N fragment of BoNT serotype D (SEQ ID NOS:25 and 26).

Figures 15A and 15B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_N fragment of BoNT serotype E (SEQ ID NOS:27 and 28).

Figures 16A and 16B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_N fragment of BoNT serotype F (SEQ ID NOS:29 and 30).

Figures 17A and 17B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_N fragment of BoNT serotype G (SEQ ID NOS:31 and 32).

Figures 18A and 18B respectively show the nucleotide sequence and the encoded amino acid sequence for a synthetic gene encoding the H_C fragment of BoNT serotype F (SEQ ID NOS:33 and 34).

Figures 19A, 19B, and 19C. Figure 19A shows the AT base content of a putative fragment C region in native *C. botulinum* DNA. Figure 19B shows the reduced AT content after the first design (rBoNTF(Hc)1) of the synthetic gene. Figure 19C shows the AT content of the final gene design (rBoNTF(Hc)2) used to express recombinant rBoNTF(Hc) in *P. pastoris*.

Figures 20A and 20B. Figure 20A shows an SDS-PAGE gel and Figure 20B shows a Western blot of samples at various steps along the rBoNTF(Hc) purification. Lanes

from both figures are identical except lane 1, where SDS-PAGE shows Novex mark 12 wide-range molecular weight markers and Western blot shows Novex See Blue prestained molecular weight markers. Lane 2 is the cell lysate, lane 3 is the cell extract, lane 4 is the cell extract after dialysis, lane 5 is pool of rBoNTF(Hc) positive fractions after Mono S column chromatography, and lane 6 is pool of rBoNTF(Hc)-positive fractions after hydrophobic interaction chromatography.

Figures 21A and 21B show purification of rBoNTF(Hc) by sequential chromatography. Figure 21A shows Mono S cation exchange chromatography of extract from *P. pastoris*. Proteins were eluted with increasing NaCl gradient. Fractions positive for rBoNTF(Hc) by Western analysis were pooled individually and subjected to hydrophobic interaction chromatography (the results of which are shown in Figure 21B) and proteins were eluted with a decreasing ammonium sulfate gradient. In both panels, protein monitored by A280nm is recorded on the left axis and elution conditions are recorded on the right axis, with the gradient trace laid over the chromatogram.